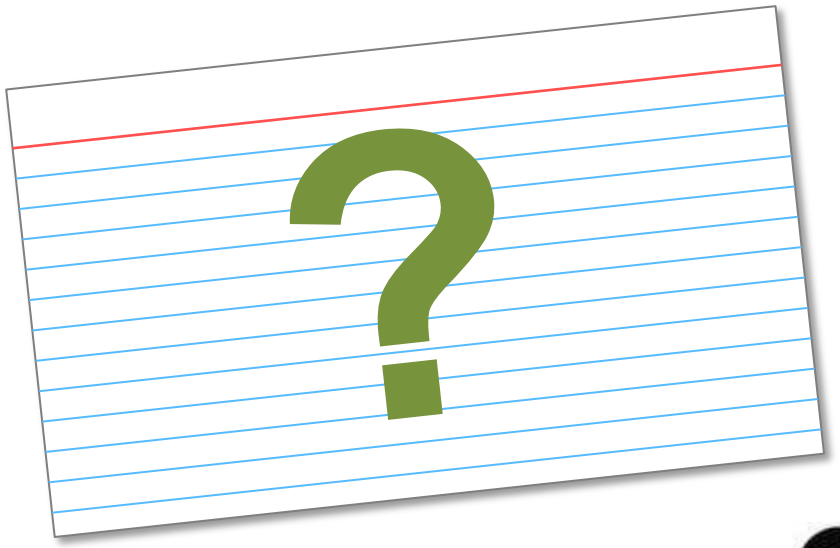
Break-out Sessions

Break-out Sessions

- Using environmental challenges identified by workshop participants, break-out session groups will identify candidate connected vehicle applications that may be deployed in the near-term to reduce fuel consumption and emissions

- **Expected Outcome:** Identify connected vehicle applications that are good candidates for near-term deployment (and address local needs)



Challenges from Workshop Participants

- Air Quality, Measure CO, NO_2, SO_2, and Emissions
- (1) ZEV/LEV Adoption, (2) apathy, and (3) technology policy
- (1) Availability of portable water and water quality, (2) air pollution affecting genetic evolution of living organisms, and (3) denial of scientific evidence acceptance of anecdotal unsupportable and illogical conclusions
- Convincing NHTSA & EPA that these AERIS applications should be considered for CAFE off-cycle credits
- (1) Economics/ROI, (2) fragmentation of data platforms, and (3) DOT operates in isolation from car companies and the IT industry

Challenges from Workshop Participants

- (1) Recurring congestion along freeway and (2) spill backs from freeway ramp merge along the arterial
- (1) Unnecessary idling at traffic lights and (2) needing to know what transit options are available near me now including car or bike parking availability
- (1) Localized emissions hotspots from recurring congestion, (2) Port of Boston truck route impacts –noise, particulates, idling, and (3) climate adaptation regulation and alignment with transportation sector
- (1) Congestion, (2) accidents, and (3) wasted energy

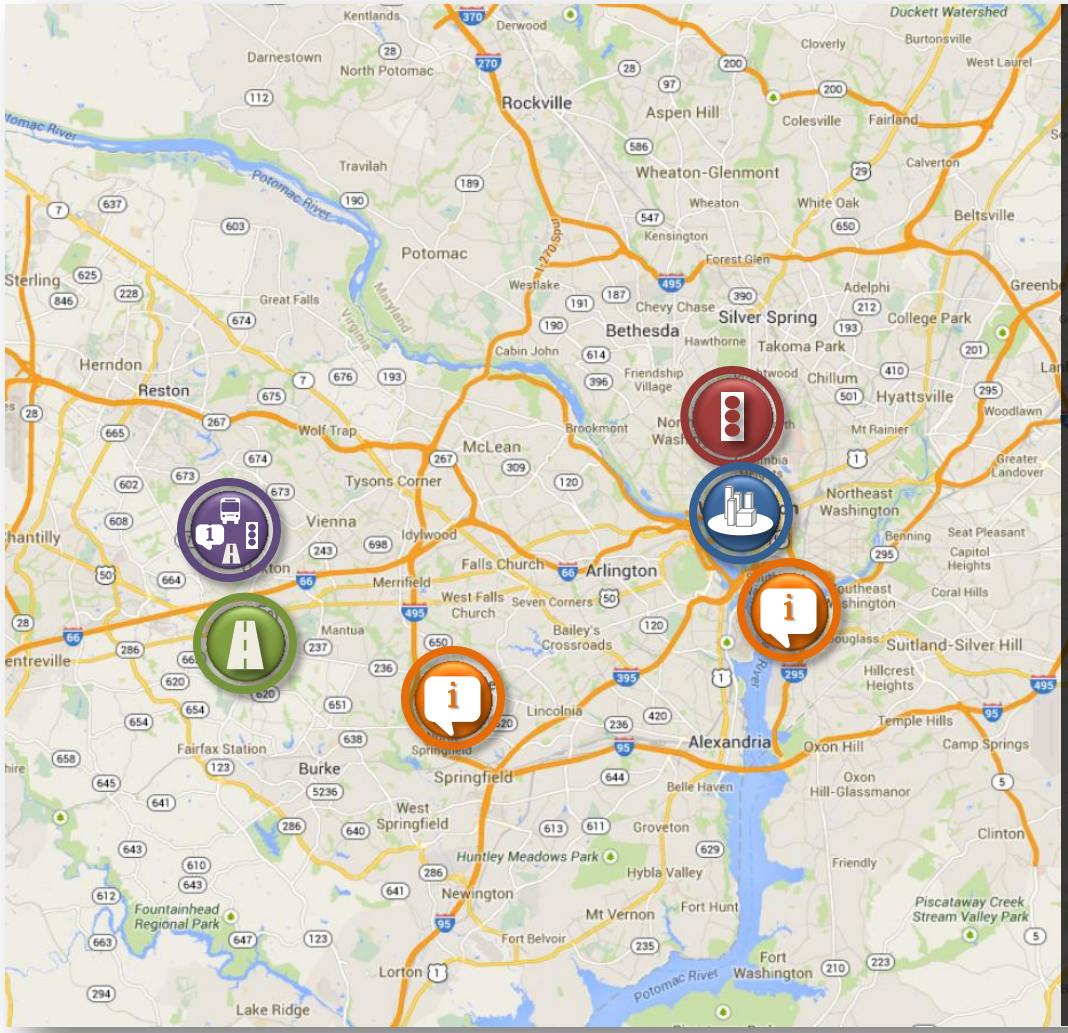
Challenges from Workshop Participants

- (1) I need bike services to be better integrated into city traffic operations so it's easier a safer to ride my bicycle, (2) I need more integrated transport choices to get around to get around during a special event, (3) Poor air quality around the port area due to truck idling and (4) How do we address code red air quality days?

- (1) Any V2V or V2I Apps cannot increase driver distraction, (2) the more the apps are automated (less dependent on driver behavior) the more credible the measurements will be, and (3) all fuel savings measurements must be verifiable and credible so OEMs who spend money on apps can also realize credible greenhouse gas credits

- Intersection control efficiency can be vastly improved by connected vehicle technology

Washington, D.C. Metropolitan Area



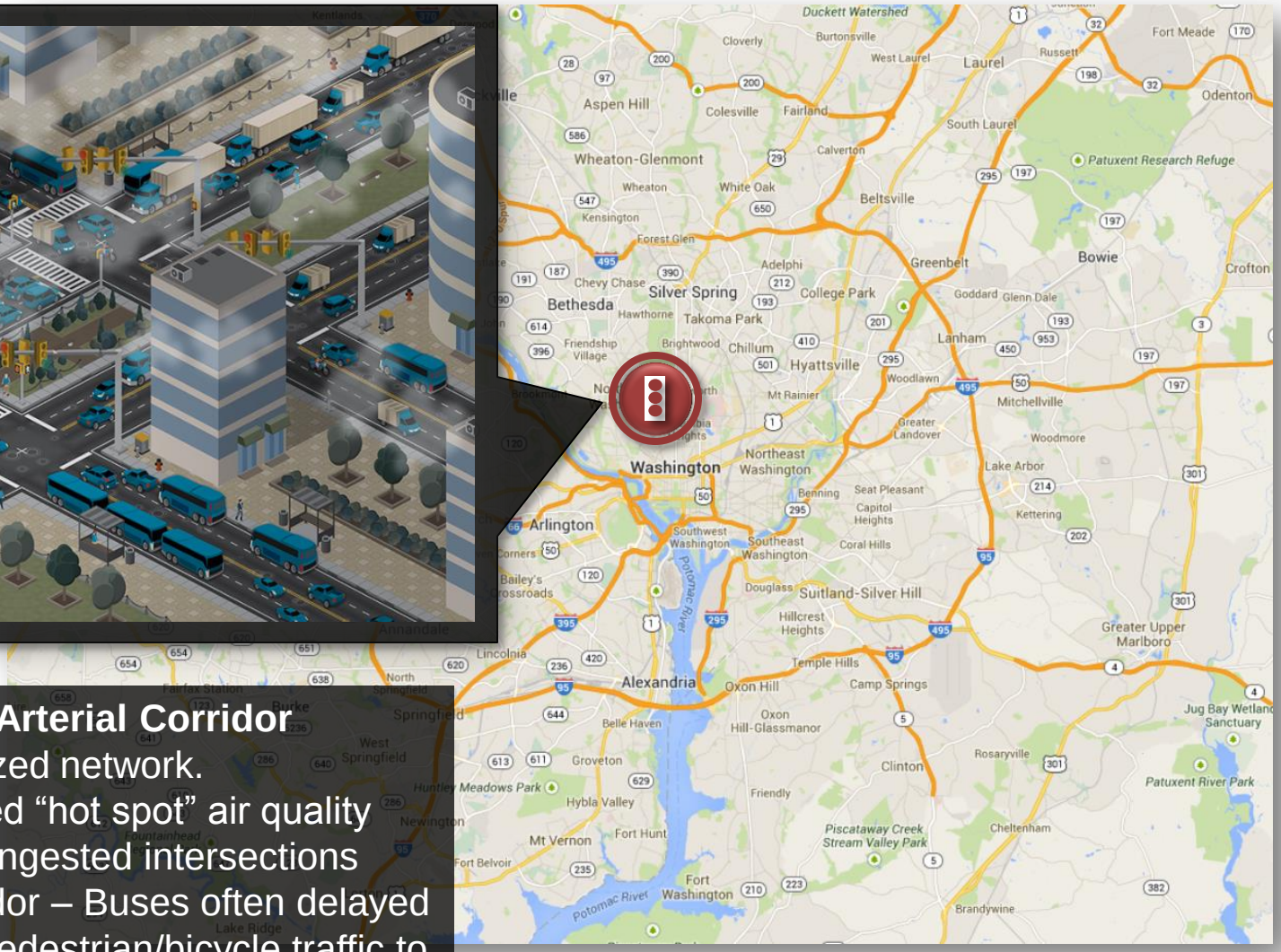
Washington, D.C. (2011)

- Travel Time index: 1.32 rank 4
- Excess Fuel per Auto Commuter: 32 Gallons Ranked 1
- Congestion Cost Per Auto Commuter: $1,398 Ranked 1
- Travel Delay: 179,331 thousand hours Ranked 4
- Excess Fuel Consumed: 85,103 thousand gallons Ranked 5
- Pounds per Auto Commuter (CO_2 produced during congestion only): 631 Ranked 1
- Total Peak Period Travel Time: 53 minutes Ranked 1

Just 76% of all Washington D.C. area commuters used a private vehicle to get to work, less than nearly all other large metropolitan areas. And as many as 14.8% of commuters used public transit — among the most in the nation. But with the Washington area among the nation's most congested, the average commute time to work was 34.5 minutes. Large stretches of Interstate 95 and the Capital Beltway ranked among the worst congestion corridors in the nation.

Washington, D.C. Metropolitan Area

Urban Signalized Corridor

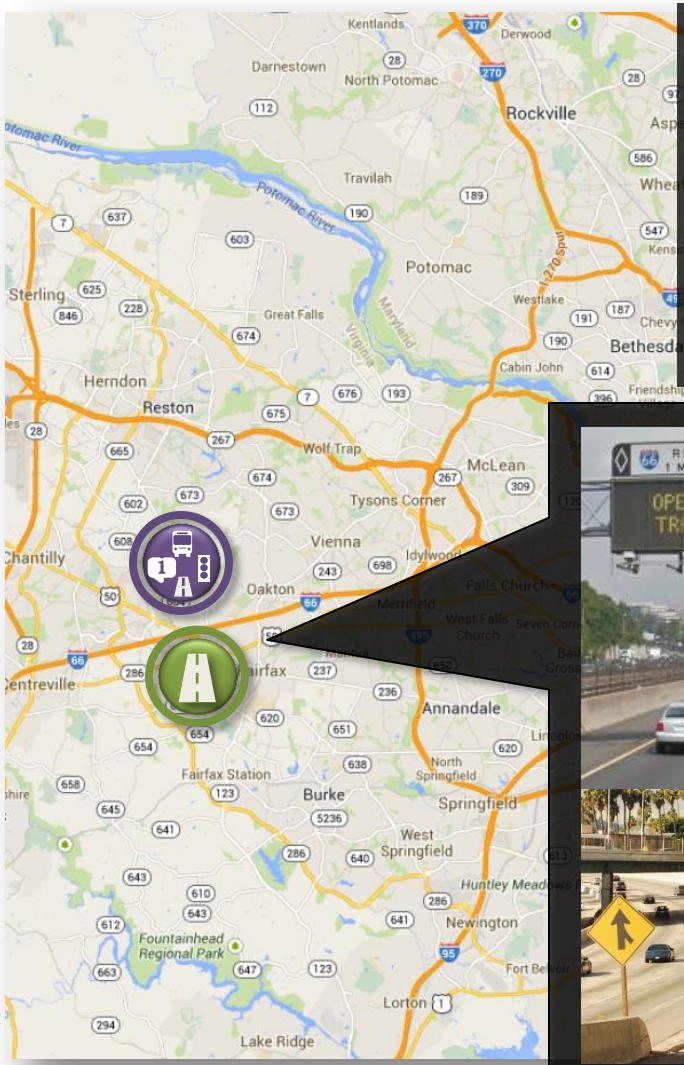


Urban Arterial Corridor

- Busy signalized network.
- Poor localized “hot spot” air quality
- Complex, congested intersections
- Transit corridor – Buses often delayed
- Difficult for pedestrian/bicycle traffic to share real-estate

Washington, D.C. Metropolitan Area

Freeway Corridor (Freeway/Arterial Corridor)

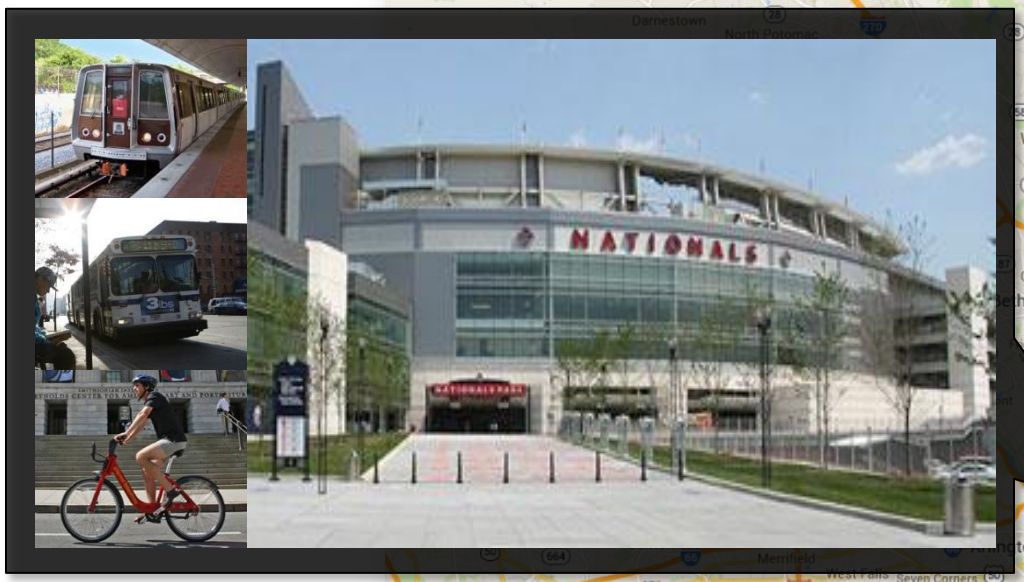


Interstate 66

- Heavily congested freeway especially during rush hour
- Existing high occupancy vehicle (HOV) lanes have additional capacity
- Transit vehicles on the corridor experience delays
- Parallels two arterials (Route 50 and Route 29)

Washington, D.C. Metropolitan Area

Routine Event – Nationals Games

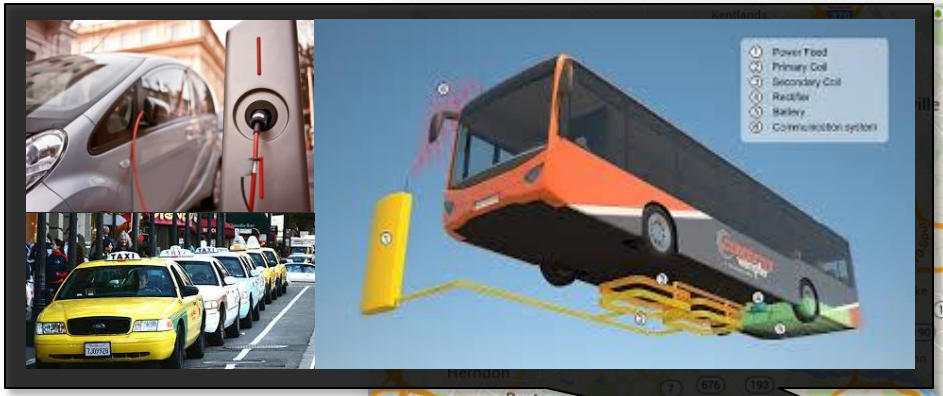


Nationals Park

- Large crowds: 41,888 capacity
- Limited parking garages
- Overcrowded Metro Rail stations after games
- Heavy post game congestion on arterials and freeways
- Multi-modal travel options: transit, bike share
- Local businesses include restaurants/bars

Washington, D.C. Metropolitan Area

Support for Alternative Fuel Vehicles

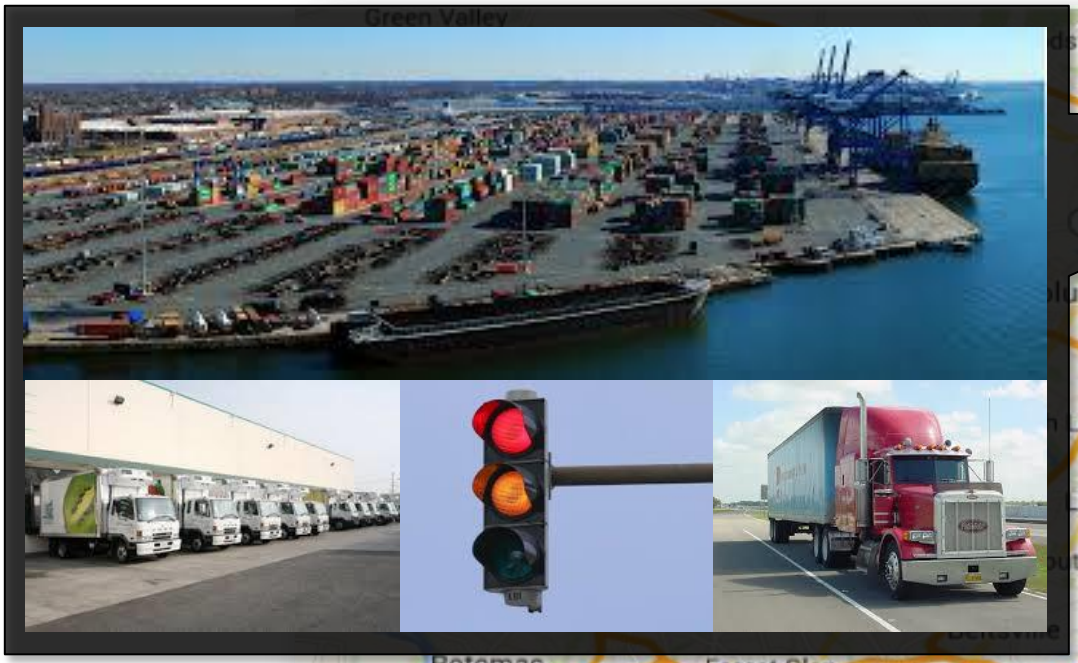


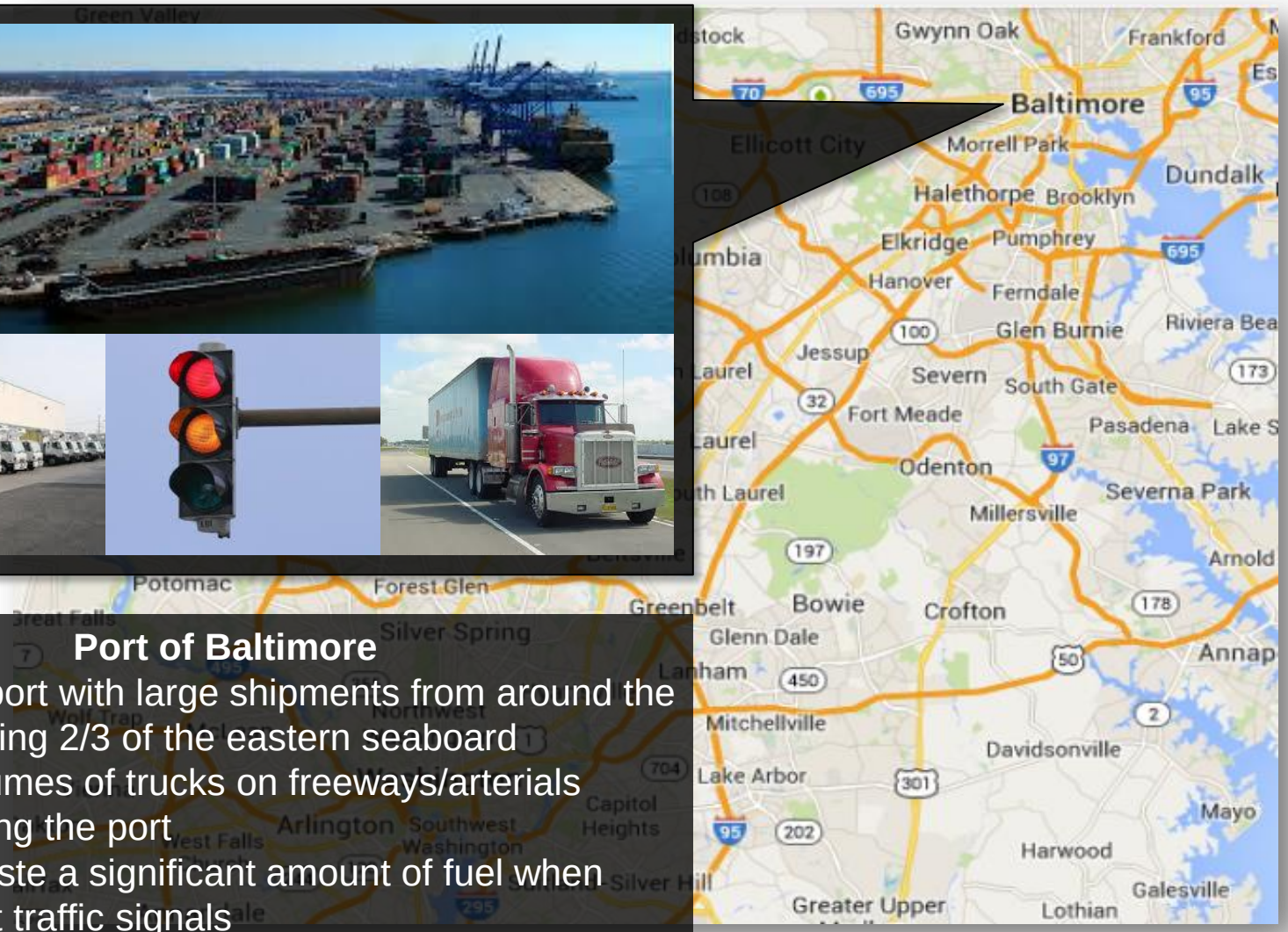
Alternative Fuel Vehicles

- Limited, but increasing number of Alternative Fuel Vehicles in the region
- Limited fuel/charging stations for alternative fuel vehicles
  - 497 public; 76 private electric charging stations in Virginia
- Range anxiety a concern for individual drivers and fleet operators

Port of Baltimore: Baltimore, MD

Freight / Delivery Fleets





Port of Baltimore

- Shipping port with large shipments from around the world serving 2/3 of the eastern seaboard
- Large volumes of trucks on freeways/arterials approaching the port
- Trucks waste a significant amount of fuel when stopped at traffic signals
- Delivery fleets encounter heavy congestion in the Baltimore/Washington DC area

Discussion Questions

- What near-term connected vehicle applications could be deployed to address the challenges you identified?
- Are there opportunities to integrate these connected vehicle applications with existing ITS solutions in your jurisdiction? If so, can this easily be done?
- What performance measures should be collected to demonstrate environmental benefits? How would you collect these measures?
- What can AERIS do for your agency or jurisdiction to support near-term deployments?
- If you perceive there to be barriers in deploying applications, what are the paths to overcoming these barriers?

Break-out Session

- Workshop participants will be divided among two rooms to ensure that everyone has the opportunity to think creatively and constructively

- Webinar participants can participate in break-out session discussions
  - Remain on the phone – lines will continue to stay muted
  - Enter comments in the chat box – support staff will convey your inputs and questions to the group
  - All chat box inputs will be captured for future reference

- Break-out Session Rooms
  - Break-out Session Room #1: Capitol Ballroom (general session room)
  - Break-out Session Room #2: House Room

Break

Key Takeaways from Break-out Sessions

Near-Term Applications and Challenges Addressed

- Which ones yield the most benefits at lowest penetration and which give the most benefit to consumer/agency
- Use current programs (e.g., HOV lanes allowing hybrid vehicle use) to encourage adoption of new applications (e.g., eco-lanes)
- Make benefits clear to individual users and meaningful
- Look at what we have – OEMs with technologies and progressive insurance. What can we do with existing vehicle capabilities?
- Make a clear statement about privacy and who owns the data
- Leverage existing ITS and technologies to improve penetration rates – look for win-win situations
- The Eco-Approach and Departure at Signalized Intersections application will pay for itself due to a high level of benefit

Near-Term Applications and Challenges Addressed

- The parking issue is real and a defined benefit
- Electric vehicle issues exist and could be addressed
- Engine start/stop technology could be a near-term win
- Platooning and moving freight
  - Amazon Prime and next day delivery
  - The freight industry is very sensitive to cost and a good candidate for early adoption due to direct cost savings and control of vehicles

Integrating Connected Vehicle Applications with Existing ITS

- Legacy Systems
- Data
- Technologies knit together

Performance Measures

- Interesting that results heard today are consistent – but different models yield different results
- Demo how much less fuel you are using → conversion to CO_2 reductions
- Does fuel saving resonate with people as opposed to CO_2
- Particulate emissions (different measure from CO_2)
- Real-time hot spots
- Important: Experimental design is paramount
- What are performance measures for stuff like bike use, multimodal transportation, cars haring effects on VMT, etc.?
- Before data needs to be collected

Performance Measures

- Mode shift
- What are incentives we use to cause larger benefits?
- How best do we represent the benefits?
- What are the cost metrics?
- What are the benefits in the long term?
- Need more extensive analysis of bundled applications – as well as multiple benefits from a single device (e.g., a single RSE located at a traffic signal)
- Importance of credible measurement
  - CAFÉ requirements are stringent
  - Off cycle credits

Performance Measures

- The more automated the application, the more credible the benefit – and a bigger case to invest in it
- Get data directly from the vehicle instead of estimates
- Challenge of private sector companies that want to play, but have proprietary systems – how to collaborate with agencies?
- Predictive analytics

What Can AERIS Do to Support Deployment?

- Missing – the ability to scale – being able to get technologies out to a larger population and more vehicles
  - Strategies to increase/improve penetration and regional/state impact
- Every connected vehicle should be open to multiple applications
- Better communication on release timeline for benefits, results, tools
- Improved technology transfer
- Improve the visibility of the federal government in technology forums and wider audience

Addressing Barriers

- Better defining roles and responsibilities for action
- Identify strategic linkages that might not be obvious
- Improve visibility to the public
- Bring solutions to politicians that they can understand/act upon
- Better understand what drives the population to adopt these technologies
- Education on environmental messaging
  - Asthma, Bronchitis, etc.
  - Money
- Improve relationship with NGOs
- Role of millennials and car use patrons – address this audience in different ways

Wrap-up and Closing Remarks

Marcia Pincus, ITS-JPO